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EXAMINER

LANGMAN, JONATHAN C

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/523,951	Applicant(s) SCHERER ET AL.	
	Examiner JONATHAN C. LANGMAN	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-44 and 46-68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-44, 46-68 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 47-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee (EP 0975017 A2).

Regarding claim 47 and 54, EP teaches an antireflective coating comprising a substrate and a SiO capping layer disposed on a SiOF film ([0019]). Since the applicant teaches the same materials, the SiOF film is said to be "stabilized". It has been held that where the claimed and prior art products are identical or substantially identical in structure or are produced by identical or a substantially identical processes, a *prima facie* case of either anticipation or obviousness will be considered to have been established over functional limitations that stem from the claimed structure. *In re Best*, 195 USPQ 430, 433 (CCPA 1977), *In re Spada*, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The ***prima facie*** case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed products. *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

EP teaches that the SiO protective film is deposited by PECVD and not by ion assisted or sputter deposition. However, these deposition techniques are product by

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process limitations. The structure of EP still has the same properties and layers as instantly claimed, the only difference between EP and the instant claims being process limitations.

Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.”, (In re Thorpe, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113).

Furthermore, the applicant has not defined the amount of time, and therefore any layer that is placed on a SiOF layer will to some degree stabilize it, and hold the refractive index stable in some degree of time.

Regarding claims 48-50, EP teaches that the silica cap layer can be up to 2000 nm [0060]. Thus overlapping the instantly claimed ranges.

Regarding claims 51-52, EP teaches that the SiOF layer has a thickness of 100nm-1000nm [0060]. Thus overlapping the instantly claimed ranges.

Regarding claim 53, although EP is silent to the refractive index of the layer, it is inherent, that the refractive index of the material at the given wavelength and time will be the same, since the materials and thicknesses of EP and the instant application are similar. See in re Best as applied above.

Claims 47-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Jang et al. (US. 6,165,915).

Regarding claim 47, Jang (US 6,165,915) teaches that dense Silicon dioxide is known in the art to (1) impede diffusion of fluorine containing species from within the (SiOF) layer, and (2), impedes moisture into the (SiOF) layers, thus stabilizing the underlying SiOF layer (col. 7, lines 5-20). Although Jang teaches PECVD as a preferred embodiment for depositing the barrier layer instead of sputtering or ion assisted deposition, the claim is written in product by process form, since Jang teaches stabilization of SiOF through the use of SiO₂, it is the Examiners position that the deposition methods instantly claimed do not structurally change the article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.”, (In re Thorpe, 227 USPQ 964,966). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art,

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although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983), MPEP 2113).

Furthermore, the applicant has not defined the amount of time, and therefore any layer that is placed on a SiOF layer will to some degree stabilize it, and hold the refractive index stable in some degree of time.

Regarding claim 53, although Jang et al. is silent to the refractive index of the layer, it is inherent, that the refractive index of the material at the given wavelength and time will be the same, since the materials and thicknesses of EP and the instant application are similar.

Regarding claims 54, the stack as described above is formed on a semiconductor substrate and inherently has antireflective properties (abstract).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 22-30, 33, and 47-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (EP 0975017 A2) in view of Machol (US 5,719,705).

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Regarding claims 22 and 47, EP teaches semiconductor devices on a wafer substrate comprising a fluorine doped silicon layer (FSG) on which is disposed a dielectric silicon dioxide layer cap layer and a SiON layer (Lee, [0030]). EP go on to teach that the silica dielectric capping layer is deposited by PECVD and CVD [0002]. The PECVD of EP utilizes ion bombardment (by definition) however is silent to the use of depositing with an ion gun. Machol et al. teaches well known deposition techniques of silicon oxide layers in the art. The methods of Machol et al. teach that silicon dioxide layers can be deposited by many techniques known in the art. These techniques include CVD, IBAD, and sputtering, the sputtering technique may use a sputtered metal layer on a substrate and thereafter expose the metal layer to a reactive gas (e.g. oxygen), to form a metal oxide, other techniques include PECVD, and ion bombardment assisted deposition col. 6, line 50 – col. 7, lines 40). It would have been obvious to utilize any known deposition technique in the art to deposit the metal oxide layer of EP. Machol is relied upon for the known techniques of deposition in the art, it would have been obvious to a routineer in the art to utilize any known technique of deposition of metal oxides, including those instantly listed in claims 22 and 47. The layer of silicon oxide on the SiOF layer is said to protect the underlying layer to some degree.

Furthermore, the applicant has not defined the amount of time, and therefore any layer that is placed on a SiOF layer will to some degree stabilize it, and hold the refractive index stable in some degree of time.

Regarding claims 23-25 and 48-50 EP teach that the silica cap layer can be up to 2000 nm [0060]. Thus overlapping the instantly claimed ranges.

Regarding claim 26, Machol et al. teach that oxygen is used as a gas to form the layers of SiO₂ (col. 7, lines 5-10).

Regarding claims 27 Machol et al. teach the deposition of the SiO₂ layer by commonly known practices of IBA which utilizes argon gas as the ionizing gas for the ion gun (col. 8, lines 50-55).

Regarding claims 28, 29, 51, and 52 EP teach that the FSG layer is 100-1000 nm thick [0060]. Thus overlapping the instantly claimed ranges.

Regarding claims 30 and 53, although EP is silent to the refractive index of the layer, it is inherent, that the refractive index of the material at the given wavelength and time will be the same, since the materials and thicknesses of EP and the instant application are similar.

Regarding claims 33 and 54, the stack as described above is formed on a semiconductor substrate and has antireflective properties (abstract).

Claims 30, 31, 32, and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (EP 0975017 A2), referred to as [EP] in view of Machol (US 5,719,705), as applied above, in view of Lee et al. ("Inhomogeneous refractive index of SiO_xF_y thin films prepared by ion beam assisted deposition", referred to as [INH]).

As described above [EP], teach a SiO_xF_y film with a protective silicon oxide film disposed thereon. EP teaches that the SiO_xF_y film is made by PECVD, and does not teach producing the layer through cathodic sputtering with simultaneous gas treatments of oxidation and a fluorinated gas. However, INH teach a method for producing a

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SiO_xF_y film, comprising IBAD of a silicon film, and simultaneously oxidizing the target and introducing a CF₄ gas into the chamber to turn the layer into a SiO_xF_y film. It would have been obvious to a person having ordinary skill in the art at the time the present invention was made to use the process of INH to form the SiO_xF_y film that is used by EP; because INH has shown that the process is a known method in the art for forming the material. INH go on to teach that the refractive index of the SiO_xF_y layers is 1.41 and 1.44, which overlaps the applicants claimed range of 1.38 to 1.44.

Claims 22-30, 33-44, and 46-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Machol et al. (U.S. 5,719,705), and INH, in view of EP.

Regarding claims 22-25, 28, 29, 33-39, 47-52, and 54-60, Machol et al. teach an antireflective coating on a transparent substrate such as an ophthalmic lens (col.1, lines 5-8). The antireflective coating comprises alternating layers of high and low refractive index materials. Machol teaches that the H.I. layer is the layer closest to the substrate and also teaches that any number of layers can be used for the anti reflective coating however, 3-12 layers is preferred (Machol et al., col. 3, lines 26-50). In a specific example shown in Table 1, Machol et al. teach an ARC that comprises 4 layers. A Hi/Li/Hi/Li, with respective thicknesses of 11.33nm/ 27.30nm/ 111.07nm/ 80.91nm. These ranges overlap the instantly claimed ranges. Machol et al. fail to teach that the last Li layer comprises a stabilized SiO_xF_y layer, with a silica protective layer thereon. However, INH teach a SiO_xF_y layer as described above, and goes on to teach that It would have been advantageous to use this layer in an antireflective coating because the

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low index silicon oxyfluoride thin films can reduce the number of high and low index multilayers and widen the bandwidth of multilayer high reflectors. Therefore it would have been obvious to a person having ordinary skill in the art at the time the present invention was made to use the SiO_xF_y layer as taught by INH in the antireflective coating of Machol et al. because INH teaches the many benefits encountered by the alternative use of the low refractive index material. Furthermore, a reduction in the number of high low index multilayers will result in a lower cost of production. Thus the refractive index would take on a thickness of the outer Li as taught by Machol et al. to be 80.91 nm. The combination of INH and Machol fail to teach a protective layer of SiO_2 on top of the SiO_xF_y layer, however, EP teaches the use of a SiON and a SiO_2 layer up to 2000 nm as described above, to help with the out diffusion of fluorine from the SiO_xF_y layer, since the layer of SiO_2 layer is directly on top of the SiOF layer it is said to be protective. It would have been obvious to a person having ordinary skill in the art at the time the present invention was made to use a silica and SiON layer on top of the SiO_xF_y layer in order to maintain the structural limitations of the underlying SiO_xF_y layer during processing and to prevent out diffusion of fluorine from the SiO_xF_y which will change the values of refractive index, and material properties of the SiO_xF_y layer. As discussed above, EP teaches PECVD as the deposition technique of the SiO_2 layer, however It would have been obvious to a person having ordinary skill in the art to utilize any known deposition method to deposit the metal oxide layer. Known deposition techniques taught by Machol, for metal oxide layers, were discussed above, and include IBAD with

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an ion gun, and sputtering a metal layer and then oxidizing the layer to obtain a metal oxide layer.

Furthermore, the applicant has not defined the amount of time, and therefore any layer that is placed on a SiOF layer will to some degree stabilize it, and hold the refractive index stable in some degree of time.

Regarding claims 26 and 27, Machol et al. teach utilizing an argon gas with the IBAD deposition (col. 8, lines 50-55).

Regarding claims 30 and 53, it is inherent, that the refractive index of the material at the given wavelength and time will be the same as instantly claimed, since the materials and thicknesses of the prior art and the instant application overlap.

Regarding claims 40-43 and 61-64, the prior art of record does not teach the specific combination of high and low reflective layers, however, it would have been obvious to a person having ordinary skill in the art at the time the present invention was made to utilize any amount of layers since Machol teaches up to 12 alternating layers. Depending upon the amount of reflectance desired it would have been obvious to vary the thicknesses of the subsequent layers based on the desired reflectance as is well known in the art. It would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the thicknesses of the layers for the desired reflectance, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

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Regarding claims 44, 46 and 65-67, Machol et al teach that the antireflective coating is placed over a substrate. The substrate may comprise a laminated single version lenses each having a scratch resistant coating (Col. 8, lines 61-68). And in col. 3, lines 1-25, Machol et al. teach that the substrate may be an ophthalmic lens comprising an organic glass.

Claims 22, 26, and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jang et al. (US. 6,165,915).

Regarding claims 22, 26, 31, and 32, Jang (US 6,165,915) teaches that dense Silicon dioxide is known in the art to (1) impede diffusion of fluorine containing species from within the (SiOF) layer, and (2), impedes moisture into the (SiOF) layers, thus stabilizing the underlying SiOF layer (col. 7, lines 5-20). Although Jang teaches PECVD as a preferred embodiment for depositing the barrier layer, Jang also teaches that the barrier layer may be formed by employing methods and materials as are conventional in the art of microelectronic fabrication (col. 6, lines 10-22). The applicant is put on official notice that ion assisted deposition and sputtering metals and converting to metal oxides are known deposition methods in the art of micro electronic device fabrication, also it is well known to use the deposition techniques set forth in instant claims 26, 31, and 32. Jang thus teaches that SiO is known to stabilize SiOF, and that a routineer in the art may experiment with other deposition techniques to achieve the stabilized SiOF layer, including sputtering and ion assisted deposition. Therefore it would have been obvious

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to a routineer in the art to experiment with sputtering and ion assisted deposition, of SiO on SiOF, in order to assimilate these techniques into existing fabrication sites.

Furthermore, the applicant has not defined the amount of time, and therefore any layer that is placed on a SiOF layer will to some degree stabilize it, and hold the refractive index stable in some degree of time.

Regarding claim 30, although Jang et al. is silent to the refractive index of the layer, it is inherent, that the refractive index of the material at the given wavelength and time will be the same, since the materials and thicknesses of EP and the instant application are similar.

Regarding claim 33, the stack as described above is formed on a semiconductor substrate and inherently has antireflective properties (abstract).

Claims 22-44, and 46-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Machol et al. (U.S. 5,719,705), and INH, in view of Jang (US 6,165,915) or Wang (US 6,511,923).

Regarding claims 22, 28, 29, 33-39, 47, 51, 52, and 54-60, Machol et al. teach an antireflective coating on a transparent substrate such as an ophthalmic lens (col.1, lines 5-8). The antireflective coating comprises alternating layers of high and low refractive index materials. Machol teaches that the H.I. layer is the layer closest to the substrate and also teaches that any number of layers can be used for the anti reflective coating however, 3-12 layers is preferred (Machol et al., col. 3, lines 26-50). In a specific example shown in Table 1, Machol et al. teach an ARC that comprises 4 layers. A

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Hi/Li/Hi/Li, with respective thicknesses of 11.33nm/ 27.30nm/ 111.07nm/ 80.91nm.

These ranges overlap the instantly claimed ranges. Machol et al. fail to teach that the last Li layer comprises a stabilized SiO_xF_y layer, with a silica protective layer thereon.

INH teach a SiO_xF_y layer that is advantageous to use in an antireflective coating because the low index silicon oxyfluoride thin films can reduce the number of high and low index multilayers and widen the bandwidth of multilayer high reflectors (page 280, col. 2). Therefore it would have been obvious to a person having ordinary skill in the art at the time the present invention was made to use the SiO_xF_y layer as taught by INH in the antireflective coating of Machol et al. because INH teaches the many benefits encountered by the alternative use of the low refractive index material. Furthermore, a reduction in the number of high low index multilayers will result in a lower cost of production. Thus the refractive index would take on a thickness of the outer Li as taught by Machol et al. to be 80.91 nm, thus satisfying instant claims 28 and 29. The combination of INH and Machol fail to teach a protective layer of SiO_2 on top of the SiO_xF_y layer.

Jang teaches the use of a SiO_2 layer to stabilize SiOF, and to help with the out diffusion of fluorine from the SiO_xF_y layer (col. 7, lines 5-15). Wang teaches a silicon oxide dielectric layer on SiOF in order to impede out diffusion, and to keep the SiOF layer stabilized (see at least col. 5, lines 5-50, and col. 6, line 56-col. 7, line 15). Since these layer of SiO_2 layer are directly on top of the SiOF layer it is said to be protective. It would have been obvious to a person having ordinary skill in the art at the time the present invention was made to use a silica layer on top of the SiO_xF_y layer in order to

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maintain the structural limitations of the underlying SiO_xF_y layer during processing and to prevent out diffusion of fluorine from the SiO_xF_y which will change the values of refractive index, and material properties of the SiO_xF_y layer. Jang or Wang do not teach the specifically claimed deposition techniques for the SiO layer, however, since Wang and Jang teach that SiO stabilizes to some degree the SiOF layer, the deposition method of SiO is thereby considered trivial, and one of routine skill in the art would have found it obvious to utilize any known technique of depositing silicon oxide including sputtering, and ion assisted evaporation methods.

Machol et al. teach that silicon dioxide layers can be deposited by many techniques known in the art. These techniques include CVD, IBAD, and sputtering, the sputtering technique may use a sputtered metal layer on a substrate and thereafter expose the metal layer to a reactive gas (e.g. oxygen), to form a metal oxide, other techniques include PECVD, and ion bombardment assisted deposition col. 6, line 50 – col. 7, lines 40). In regards to the article claim 47, the instantly claimed processes do not change the structure of the article. Since Wang and Jang teach that SiO stabilizes SiOF to some degree the article thereby produced by the combination is said to read on the instant claims even though they do not specifically recite the instantly claimed processes. See the product by process case law presented above.

Furthermore, the applicant has not defined the amount of time, and therefore any layer that is placed on a SiOF layer will to some degree stabilize it, and hold the refractive index stable in some degree of time.

Regarding claims 23-25, and 48-50 Wang teaches that the protective silica layer has a thickness of less than 50 nms (col. 6, lines 7-12), which is sufficient to stabilize the SiOF layer. It would have been obvious to a person having ordinary skill in the art at the time the present invention was made to utilize this thickness range since it has been shown to be sufficient for protection, and by depositing thinner layers results in quicker production and lower costs.

Regarding claims 26 and 27, Machol et al. teach utilizing an argon gas with the IBAD deposition (col. 8, lines 50-55).

Regarding claims 30-32, 53, and 68 INH teach a method for producing a SiO_xF_y film, comprising IBAD of a silicon film, and simultaneously oxidizing the target and introducing a CF₄ gas into the chamber to turn the layer into a SiO_xF_y film. It would have been obvious to a person having ordinary skill in the art at the time the present invention was made to use the process of INH to form the SiO_xF_y film that is to be obviously used in Machol, because INH has shown that the process is a known method in the art for forming the material. INH go on to teach that the refractive index of the SiO_xF_y layers is 1.41 and 1.44, which overlaps the applicants claimed range of 1.38 to 1.44.

Regarding claims 40-43 and 61-64, the prior art of record does not teach the specific combination of hi and low reflective layers, however, It would have been obvious to a person having ordinary skill in the art at the time the present invention was made to utilize any amount of layers since Machol teaches up to 12 alternating layers. Depending upon the amount of reflectance desired it would have been obvious to vary

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the thicknesses of the subsequent layers based on the desired reflectance as is well known in the art. It would have been obvious to one having ordinary skill in the art at the time of the invention to adjust the thicknesses of the layers for the desired reflectance, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 44, 46 and 65-67, Machol et al teach that the antireflective coating is placed over a substrate. The substrate may comprise a laminated single version lenses each having a scratch resistant coating (Col. 8, lines 61-68). And in col. 3, lines 1-25, Machol et al. teach that the substrate may be an ophthalmic lens comprising an organic glass.

Response to Arguments

Applicant's arguments filed December 22, 2008 have been fully considered but they are not persuasive.

The amendments to the claims have overcome the 112 rejections set forth in the previous office action.

1. EP 0975017.

The applicant argues that EP explains that fluorine diffusion out of the FSG layer was not prevented by the SiO₂ cap layer ([0047]). In order to differentiate the prior art

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product from the instantly claimed product by process claim, the applicant argues that since the SiO₂ of the prior art does not function as a protective layer that the prior art product is not the same as the instantly claimed product.

The Examiner disagrees. The instant claims are to a stabilized SiOF layer, which is stabilized by the Silica or Metal oxide layer deposited thereon. The applicant has never defined the amount or degree of stabilization. It is the Examiners position that even if Fluorine would diffuse into the Silica layer, it would still stabilize to some degree the SiOF layer.

The applicant to some degree attempted to define the amount of stabilization by stating that the stabilized SiOF layer has a refractive index stable in time. The applicant has not defined the amount of time. So any time is said to read on the claims. Furthermore there are other influences that affect fluorine outdiffusion such as temperature, use, etc. In these regards the applicants' arguments are not persuasive.

EP teaches in paragraph [0030] that a dielectric Silica layer on the FSG layer and a silicon oxynitride on the silica layer is sufficient to prevent fluorine substance outflow therethrough from the FSG layer. Therefor it is the Examiner's position that the combination of silica and SiON aid in stabilizing the FSG (SiOF) layer. The applicant uses open ended claim language ("comprising") therefore the claims do not preclude another layer (SiON) present thereon.

The applicant argues that EP teaches replacing the Silica protective layer with SiON. However this is not the only scenario or preferred embodiment, EP also teaches using SiON in conjunction with the silica protective layer on SiOF ([0048]).

Furthermore, SiON, even if the only layer on the SiOF layer, can still be considered a Metal oxide layer. The applicant uses again open ended language. And in the broadest reasonable interpretation of the instant claims the SiON layer of EP can also read on the applicants' instantly claimed metal oxide layer.

The applicant states that the claimed method allowed for a refractive index of the underlying SiOF layer which is stable over time, and states that this feature would not be obtained if the SiO₂ and/or metal oxide protective layer had been deposited without ion assistance or without sputtering. These statements are merely conclusory statements made by the attorney and not supported by any evidence or fact.

It is noted that "the arguments of counsel cannot take the place of evidence in the record", *In re Schulze*, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). It is the examiner's position that the arguments provided by the applicant regarding the deposition methods obtaining the stabilized SiOF over time must be supported by a declaration or affidavit. As set forth in MPEP 716.02(g), "the reason for requiring evidence in a declaration or affidavit form is to obtain the assurances that any statements or representations made are correct, as provided by 35 U.S.C. 24 and 18 U.S.C. 1001". The burden is on the applicant to show that the prior art product does not teach a stabilized SiOF layer over time. The applicant has not persuasively argued or shown that the prior art methods of EP would not result in a stabilized SiOF layer over time.

2. Jang

The applicant argues that Jang fails to teach the instantly claims product by process limitations. The applicant argues that Jang teaches the use of PECVD which is different form the instantly claimed processes. For reasons of record the rejections are still maintained. These claims re presented in product by process form, and little weight is given to the process laminations, unless the applicant can show that the prior art processes will achieve a product that is materially different from that instantly claimed. Since Jang teaches the stabilization of SiOF (Col. 7, lines 5-25) it is the Examiners position that the rejection still applies to the claim as presented.

The burden is on the applicant to show that the prior art product does not teach a stabilized SiOF layer over time. The applicant has not persuasively argued or shown that the prior art methods of EP would not result in a stabilized SiOF layer over time.

3. Obviousness rejections.

The applicant's main arguments in regards to the obviousness rejections is that Machol and Lee do not teach a motivation i.e. to use their taught ion assisted and sputtering deposition techniques. The applicant argues that Machol and Lee do not teach that using the deposition methods instantly claimed will result in a refractive index that is stable in time.

The motivation set forth in the rejections above is that these techniques instantly claimed are known alternatives to the PECVD techniques taught by Lee and Jang.

An exemplary rationale that may support a conclusion of obviousness includes

(C) Use of a known technique to improve similar devices (products or methods) in the same way, (MPEP 2141 [R-6], KSR International Co. v. Teleflex Inc. (KSR), 550 U.S. ___, 82 USPQ2d 1385 (2007)).

Jang teaches the use of a dense SiO₂ layer to stabilize SiOF, and to help with the out diffusion of fluorine from the SiO_xF_y layer (col. 7, lines 5-15). Wang teaches a silicon oxide dielectric layer on SiOF in order to impede out diffusion, and to keep the SiOF layer stabilized (see at least col. 5, lines 5-50, and col. 6, line 56-col. 7, line 15). The methods taught by Wang and Jang include PECVD. Machol teaches that PECVD, ion assisted deposition and sputtering methods are known deposition methods in the art of forming silicon oxide and metal oxide films.

Therefore it would have been obvious to routineer to use known techniques (Ion assisted and sputtering deposition) to improve similar devices products in the same way that is taught in the art of Wang and Jang.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN C. LANGMAN whose telephone number is (571)272-4811. The examiner can normally be reached on Mon-Thurs 8:00 am - 6:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCL

/Timothy M. Speer/
Primary Examiner, Art Unit 1794